

**Montana Board of Oil and Gas Conservation
Environmental Assessment**

Proposed Action: Approve Drilling Permit (Form 22)

Operator: Whiting Oil and Gas Corporation

Well Name/Number: State 43-16-1H

Location: NE SE Section 16 T24N R59E

County: Richland, **MT;** **Field (or Wildcat)** W/C (Bakken Horizontal)

Air Quality

(possible concerns)

Long drilling time: No, 30 to 40 days drilling time.

Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a single lateral Bakken Formation well test to 20,691'MD/10,369'TVD.

Possible H₂S gas production: H₂S gas production possibility is slight (Mississippian Formations).

In/near Class I air quality area: No Class I air quality area in the area of review.

Air quality permit for flaring/venting (if productive): Yes, DEQ air quality permit required under rule 75-2-211.

Mitigation:

☒ Air quality permit (AQB review)

☐ Gas plants/pipelines available for sour gas

☐ Special equipment/procedures requirements

☐ Other: _____

Comments: No special concerns – using triple derrick drilling rig to drill a single lateral Bakken Formation well test to 20,691'MD/10,369'TVD. If existing pipeline for gas in the area, associated gas can be gathered or if no gathering system nearby, associated gas can be flared under Board Rule 36.22.1220.

Water Quality

(possible concerns)

Salt/oil based mud: Yes, oil based invert drilling fluids will be used on the mainhole. The horizontal lateral will be drilled with brine water. The surface hole will be drilled with freshwater and freshwater drilling fluids.

High water table: No high water table the area of review.

Surface drainage leads to live water: No, closest drainage is an unnamed ephemeral tributary drainage to the Second Hay Creek, about 2/5 of a mile to the east Second Hay Creek is about 3/10 of a mile to the east from this location.

Water well contamination: None, closest water wells are about 3/5 of a mile to the south, about 2/5 of a mile to the south and about 4/5 of a mile to the northeast from this location. All other water wells are 1 mile and further from this location in any direction. Depth of these domestic/stock water wells range from 10' to 75'. Surface casing hole will be drilled with freshwater and freshwater drilling fluids. Surface casing will be run and cemented to surface from 1750'.

Porous/permeable soils: No, sandy clay soils.

Class I stream drainage: No class I stream drainages in this area.

Mitigation:

☒ Lined reserve pit

☒ Adequate surface casing

☐ Berms/dykes, re-routed drainage

- ☒ Closed mud system
☒ Off-site disposal of solids/liquids (in approved facility)
Other: _____

Comments: 1750' of surface casing cemented to surface adequate to protect freshwater zones and to cover the base of the Fox Hills Formation.

Soils/Vegetation/Land Use

(possible concerns)

Stream crossings: No, stream crossings anticipated.

High erosion potential: No high erosion potential. This location will require a small cut, up to 9' and small fill, up to 5.4', required.

Loss of soil productivity: None, location to be restored after drilling well, if well is nonproductive. If productive unused portion of drillsite will be reclaimed.

Unusually large wellsite: Yes, very large wellsite 550'X450'. This location size is required to accommodate 4 horizontal wells: State 43-16-1H, State 43-16-2H, State 43-16-3H and State 43-16-4H.

Damage to improvements: No surface use is a cultivated land.

Conflict with existing land use/values: Slight

Mitigation

- ☐ Avoid improvements (topographic tolerance)
☐ Exception location requested
☒ Stockpile topsoil
☐ Stream Crossing Permit (other agency review)
☒ Reclaim unused part of wellsite if productive
☐ Special construction methods to enhance reclamation
Other: _____

Comments: Access to location will be over existing county road, #350, #134, #132 and existing lease. An access of 406' will be built off existing lease road into this location. Oil based invert drilling fluids will be recycled. Completion fluids will be hauled to a Class II Disposal. Drilling cuttings and mud solids will be fly ashed in the lined cuttings pit and will have a minimum of 4' of soil cover over the top of the solidified cuttings. No special concerns.

Health Hazards/Noise

(possible concerns)

Proximity to public facilities/residences: Nearest residences are about 1.1 miles to the southwest, about 2 miles to the northwest, and 1.8 miles to the north from this location. The town of Fairview, Montana is about 4 miles to the northeast and the town of Sidney, Montana is about 8 miles to the south from this location.

Possibility of H2S: H2S potential is slight (Mississippian Formations).

Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time.

Mitigation:

- ☒ Proper BOP equipment
☐ Topographic sound barriers
☐ H2S contingency and/or evacuation plan
☐ Special equipment/procedures requirements
Other: _____

Comments: Adequate surface casing and operational BOP should mitigate any problems. (BOP's 5,000 psig annular, pipe and blind rams) rule 36.22.1014.
No concerns.

Wildlife/recreation

(possible concerns)

Proximity to sensitive wildlife areas (DFWP identified): None in the area of review.
Proximity to recreation sites: None in the area of review.
Creation of new access to wildlife habitat: No, surface use is cultivated land.
Conflict with game range/refuge management: No
Threatened or endangered Species: Species identified as threatened or endangered are the Pallid Sturgeon, Interior Least Tern, Whooping Crane and Piping Plover.
Candidate species are the Greater Sage Grouse and the Sprague's Pipit. MTFWP Natural Heritage Tracker website lists three (3) species of concern: the Whooping Crane, Northern Redbelly Dace, and Iowa Darter.

Mitigation:

- ☐ Avoidance (topographic tolerance/exception)
- ☐ Other agency review (DFWP, federal agencies, DNRC Trust Lands) **BLM**
- ☐ Screening/fencing of pits, drillsite
- ☐ Other: _____

Comments: State of Montana leased cultivated surface lands. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. State of Montana "Trust Lands" minerals and surface. Trust Lands will do surface EA.

Historical/Cultural/Paleontological

(possible concerns)

Proximity to known sites None identified.

Mitigation

- ☐ avoidance (topographic tolerance, location exception)
- ☐ other agency review (SHPO, DNRC Trust Lands, federal agencies) **BLM**
- ☐ Other: _____

Comments: State of Montana leased cultivated surface lands. There may be possible historical/cultural/paleontological sites that maybe impacted by this wellsite. We ask the operator to consult with the surface owner as to his desires to preserve these sites or not, if they are found during construction of the wellsite. State of Montana "Trust Lands" minerals and surface. Trust Lands will do surface EA.

Social/Economic

(possible concerns)

- ☐ Substantial effect on tax base
- ☐ Create demand for new governmental services
- ☐ Population increase or relocation

Comments: No concerns.

Remarks or Special Concerns for this site

A single lateral horizontal Bakken Formation well test to 20,691'MD/10,369'TVD. No concerns.

Summary: Evaluation of Impacts and Cumulative effects

No significant long term impacts expected, some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): \s\ John Gizicki
(title:) Compliance Specialist
Date: March 24, 2014

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website

(Name and Agency)

Water wells in Richland County

(subject discussed)

March 24, 2014

(date)

US Fish and Wildlife, Region 6 website

(Name and Agency)

ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES

MONTANA COUNTIES, Richland County

(subject discussed)

March 24, 2014

(date)

Montana Natural Heritage Program Website (FWP)

(Name and Agency)

Heritage State Rank= S1, S2, S3, T24N R59E

(subject discussed)

March 24, 2014

(date)

If location was inspected before permit approval:

Inspection date: _____

Inspector: _____

Others present during inspection: _____